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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/530,084

Applicant(s)

HAENEN ET AL.

Examiner

SATHAVARAM I. REDDY

Art Unit

1794

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 91-134 is/are pending in the application.
- 4a) Of the above claim(s) 121-134 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 91-120 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/1/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/06)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 6/13/2005, 7/2/2009

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 91-120 in the reply filed on 11/23/2009 is acknowledged.
2. Claims 121-134 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected process, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/23/2009.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. **Claims 93 and 101-118 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**
5. The term "substantially" in claim 93 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "substantially" makes claim 93 indefinite in that it is not clear if the surface of the image

receptive layer is non-polar. Either the surface of the image receptive layer is non-polar or it is not. The Examiner interprets this limitation as the surface of the image receptive layer is non-polar.

6. The term "approximately" in claim 101 is a relative term which renders the claim indefinite. The term "approximately" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "approximately" makes claim 101 indefinite in that it is not clear if 90% of the particles are smaller than 1 μm . Either 90% of the particles are smaller than 1 μm or they are not. The Examiner interprets this limitation as 90% of the particles are smaller than 1 μm .

7. The term "approximately" in claim 102 is a relative term which renders the claim indefinite. The term "approximately" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "approximately" makes claim 102 indefinite in that it is not clear if 90% of the particles are smaller than 1 μm . Either 90% of the particles are smaller than 1 μm or they are not. The Examiner interprets this limitation as 90% of the particles are smaller than 1 μm .

8. In regard to claims 107 and 114, it is not clear if all the additives are required. Also, if the group is supposed to be grouped in a Markush group, then appropriate Markush group language is required.

9. The term "approximately" in claim 112 is a relative term which renders the claim indefinite. The term "approximately" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "approximately" makes claim 112 indefinite in that it is not clear if 90% of the particles are smaller than 1 μm . Either 90% of the particles are smaller than 1 μm or they are not. The Examiner interprets this limitation as 90% of the particles are smaller than 1 μm .

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 91-97, 99-101, 111 and 114 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyamoto et al (US 4,460,637).

Regarding claim 91, Miyamoto et al (US 4,460,637) discloses a printing sheet comprising a substrate (col. 8, lines 37-48) and two image receiving layers with pore

widths below 200 nm disposed thereon each comprising a pigment part of 100 parts of calcium carbonate smaller than $0.5\text{ }\mu\text{m}$ (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) and each comprising 0 parts in dry weight of binder and 0 parts in dry weight of additives (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27).

Regarding claim 92, it is given that Miyamoto et al (US 4,460,637) disclosing a printing sheet comprising a substrate (col. 8, lines 37-48) and two image receiving layers with pore widths below 200 nm disposed thereon each comprising a pigment part of 100 parts of calcium carbonate smaller than $0.5\text{ }\mu\text{m}$ (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) and each comprising 0 parts in dry weight of binder and 0 parts in dry weight of additives (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) would inherently have the cumulative porosity volume of pore widths below 200 nm to be more than 0.008 cm^3 per gram paper.

Regarding claim 93, it is given that Miyamoto et al (US 4,460,637) disclosing a printing sheet comprising a substrate (col. 8, lines 37-48) and two image receiving layers with pore widths below 200 nm disposed thereon each comprising a pigment part of 100 parts of calcium carbonate smaller than $0.5\text{ }\mu\text{m}$ (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) and each comprising 0 parts in dry weight of binder and 0 parts in dry weight of additives (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) would inherently have the surface of the image receiving coating to be non-polar.

Regarding claim 94, it is given that Miyamoto et al (US 4,460,637) disclosing a printing sheet comprising a substrate (col. 8, lines 37-48) and two image receiving layers with pore widths below 200 nm disposed thereon each comprising a pigment part of 100 parts of calcium carbonate smaller than 0.5 μm (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) and each comprising 0 parts in dry weight of binder and 0 parts in dry weight of additives (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) would inherently have the polar part of the surface energy of the surface of the image receiving coating be less than 7 mN/m when measured by contact angle measurements at a Parker Print Surf (PPS) surface roughness of between 0.8 and 1 μm .

Regarding claim 95, it is given that Miyamoto et al (US 4,460,637) disclosing a printing sheet comprising a substrate (col. 8, lines 37-48) and two image receiving layers with pore widths below 200 nm disposed thereon each comprising a pigment part of 100 parts of calcium carbonate smaller than 0.5 μm (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) and each comprising 0 parts in dry weight of binder and 0 parts in dry weight of additives (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) would inherently have the polar part of the surface energy of the surface of the image receiving coating be more than 4 mN/m.

Regarding claim 96, it is given that Miyamoto et al (US 4,460,637) disclosing a printing sheet comprising a substrate (col. 8, lines 37-48) and two image receiving

layers with pore widths below 200 nm disposed thereon each comprising a pigment part of 100 parts of calcium carbonate smaller than 0.5 μm (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) and each comprising 0 parts in dry weight of binder and 0 parts in dry weight of additives (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) would inherently have the gloss of the surface of the image receiving coating be more than 75% according to TAPPI 75deg.

Regarding claim 97, it is given that Miyamoto et al (US 4,460,637) disclosing a printing sheet comprising a substrate (col. 8, lines 37-48) and two image receiving layers with pore widths below 200 nm disposed thereon each comprising a pigment part of 100 parts of calcium carbonate smaller than 0.5 μm (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) and each comprising 0 parts in dry weight of binder and 0 parts in dry weight of additives (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) would inherently have the gloss of the surface of the image receiving coating be more than 50% according to DIN 75deg.

Regarding claim 99, it is given that Miyamoto et al (US 4,460,637) disclosing a printing sheet comprising a substrate (col. 8, lines 37-48) and two image receiving layers with pore widths below 200 nm disposed thereon each comprising a pigment part of 100 parts of calcium carbonate smaller than 0.5 μm (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) and each comprising 0 parts in dry weight of binder and 0

parts in dry weight of additives (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) would inherently have a specific volume of more than $0.8 \text{ cm}^3/\text{g}$.

Regarding claim 100, it is given that Miyamoto et al (US 4,460,637) disclosing a printing sheet comprising a substrate (col. 8, lines 37-48) and two image receiving layers with pore widths below 200 nm disposed thereon each comprising a pigment part of 100 parts of calcium carbonate smaller than $0.5 \mu\text{m}$ (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) and each comprising 0 parts in dry weight of binder and 0 parts in dry weight of additives (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) would inherently have an ink set-off of less than 0.3 at 30 seconds.

Regarding claim 101, Miyamoto et al (US 4,460,637) discloses a printing sheet where the top image receiving layer comprises a pigment part of 100 parts of calcium carbonate smaller than $0.5 \mu\text{m}$ (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) and each comprising 0 parts of fine particulate kaolin and 0 parts of another fine particulate (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27).

Regarding claim 111, Miyamoto et al (US 4,460,637) discloses a printing sheet where the second image receiving layer comprises a pigment part of 100 parts of calcium carbonate smaller than $0.5 \mu\text{m}$ (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) and each comprising 0 parts of fine particulate kaolin and 0 parts of another fine particulate (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27).

Regarding claim 114, Miyamoto et al (US 4,460,637) discloses the printing sheet where the binder part of the second layer comprises a binder of starch (col. 6, line 64 – col. 7, line 26) and additives (col. 7, lines 27-31).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 116 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al (US 4,460,637).

Regarding claim 116, Miyamoto et al (US 4,460,637) discloses the printing sheet comprising 2 to 50 parts in dry weight of the binder present in the binder part (col. 6, line 64 – col. 7, line 26).

Miyamoto et al (US 4,460,637) and the claims differ in that binder part does not teach the exact same proportions as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the compositional

proportions taught by Miyamoto et al (US 4,460,637) overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference in order to have sufficient fixing of the pigment in the image receiving coating (col. 7, lines 18-26), particularly in view of the fact that;

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

14. Claims 98 and 120 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al (US 4,460,637) in view of Asaka et al (US 5,437,913).

Miyamoto et al (US 4,460,637) is relied upon as described above.

Regarding claims 98 and 120, Miyamoto et al (US 4,460,637) does not appear to explicitly disclose the printing sheet comprising an image receptive coating provided on both sides of the substrate.

However, Asaka et al (US 5,437,913) discloses the printing sheet comprising an image receptive coating provided on both sides of the substrate (col. 6, lines 12-24).

Miyamoto et al (US 4,460,637) and Asaka et al (US 5,437,913) are analogous art because they are from the same field of printing sheets.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Miyamoto et al (US 4,460,637) and Asaka et al (US 5,437,913) before him or her, to modify the printing sheet of Miyamoto et al (US 4,460,637) to include the image receptive coating provided on both sides of the substrate of Asaka et al (US 5,437,913) in that having an image receptive coating provided on both sides of the substrate provides high surface resistivity (col. 6, lines 36-42).

15. Claims 102-104, 112 and 113 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al (US 4,460,637) in view of Desie et al (US 5,418,078).

Regarding claim 102, Miyamoto et al (US 4,460,637) discloses a printing sheet having a top image receiving layer comprising a pigment part of 100 parts of calcium carbonate smaller than 0.5 μm (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27).

Miyamoto et al (US 4,460,637) does not appear to explicitly disclose the printing sheet comprising dry weight of fine particulate kaolin and dry weight of a solid particulate polymer pigment of polymethylmethacrylate.

However, Desie et al (US 5,418,078) discloses the printing sheet comprising dry weight of a fine particulate kaolin and dry weight of a solid particulate polymer pigment of polymethylmethacrylate (col. 5, line 49 – col. 6, line 15).

In regard to the dry weight of a fine particulate kaolin, it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the dry weight of a fine particulate kaolin to 10 to 40 parts by weight in order to have waterfastness and non-blocking characteristics (col. 5, lines 22-24) for the intended application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) [MPEP 2144.05(b)].

In regard to the dry weight of a solid particulate polymer pigment of polymethylmethacrylate, it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the dry weight of a solid particulate polymer pigment of polymethylmethacrylate to 10 to 15 parts by weight in order to have waterfastness and non-blocking characteristics (col. 5, lines 22-24) for the intended

application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) [MPEP 2144.05(b)].

Regarding claim 103, Miyamoto et al (US 4,460,637) discloses the printing sheet comprising solid particulate polymer pigment of melamine resin (col. 6, line 64 – col. 7, line 26).

Regarding claim 104, Miyamoto et al (US 4,460,637) does not appear to explicitly disclose the printing sheet comprising dry weight of fine particulate kaolin and dry weight of a solid particulate polymer pigment of polymethylmethacrylate.

However, Desie et al (US 5,418,078) discloses the printing sheet comprising dry weight of a fine particulate kaolin and dry weight of a solid particulate polymer pigment of polymethylmethacrylate (col. 5, line 49 – col. 6, line 15).

In regard to the dry weight of a solid particulate polymer pigment of polymethylmethacrylate, it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the dry weight of a solid particulate polymer pigment of polymethylmethacrylate to 10 to 15 parts by weight in order to have waterfastness and non-blocking characteristics (col. 5, lines 22-24) for the intended application, since it has been held that discovering an optimum value of a result

effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) [MPEP 2144.05(b)].

Regarding claim 112, Miyamoto et al (US 4,460,637) discloses a printing sheet where the second image receiving layer comprises a pigment part of 100 parts of calcium carbonate smaller than 0.5 μm (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) and each comprising 0 parts of fine particulate kaolin and 0 parts of another fine particulate (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27).

Regarding claim 113, Miyamoto et al (US 4,460,637) discloses a printing sheet having a top image receiving layer comprising a pigment part of 100 parts of calcium carbonate smaller than 0.5 μm (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27).

Miyamoto et al (US 4,460,637) does not appear to explicitly disclose the printing sheet comprising dry weight of fine particulate kaolin.

However, Desie et al (US 5,418,078) discloses the printing sheet comprising dry weight of fine particulate kaolin (col. 5, line 49 – col. 6, line 15).

In regard to the dry weight of a fine particulate kaolin, it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the dry weight

of a fine particulate kaolin to 10 to 40 parts by weight in order to have waterfastness and non-blocking characteristics (col. 5, lines 22-24) for the intended application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) [MPEP 2144.05(b)].

Miyamoto et al (US 4,460,637) and Desie et al (US 5,418,078) are analogous art because they are from the same field of printing sheets.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Miyamoto et al (US 4,460,637) and Desie et al (US 5,418,078) before him or her, to modify the printing sheet of Miyamoto et al (US 4,460,637) to include the kaolin and polymethylmethacrylate of Desie et al (US 5,418,078) in that having dry weight of a fine particulate kaolin and dry weight of a solid particulate polymer pigment of polymethylmethacrylate provides an image receiving coating with waterfastness and non-blocking characteristics (col. 5, lines 22-24).

16. Claims 105-107 and 109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al (US 4,460,637) and Desie et al (US 5,418,078) in view of Le-Khac (US 4,408,010).

Miyamoto et al (US 4,460,637) and Desie et al (US 5,418,078) are relied upon as described above.

Regarding claims 105 and 106, Miyamoto et al (US 4,460,637) and Desie et al (US 5,418,078) do not appear to explicitly disclose the printing sheet comprising a solid particulate polymer pigment of a styrene malimide copolymeric latex with a glass transition temperature in the range of 200 °C.

However, Le-Khac (US 4,408,010) discloses the printing sheet comprising a solid particulate polymer pigment of a styrene malimide copolymeric latex with a glass transition temperature in the range of 200 °C (col. 3, lines 34-39).

Regarding claim 107, Miyamoto et al (US 4,460,637) discloses the printing sheet where the binder part of the second layer comprises a binder of starch (col. 6, line 64 – col. 7, line 26) and additives (col. 7, lines 27-31).

Regarding claim 109, Miyamoto et al (US 4,460,637) discloses the printing sheet comprising 2 to 50 parts in dry weight of the binder present in the binder part (col. 6, line 64 – col. 7, line 26).

Miyamoto et al (US 4,460,637) and the claims differ in that binder part does not teach the exact same proportions as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the compositional proportions taught by Miyamoto et al (US 4,460,637) overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference in order to have sufficient fixing of the pigment in the image receiving coating (col. 7, lines 18-26), particularly in view of the fact that;

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Miyamoto et al (US 4,460,637), Desie et al (US 5,418,078) and Le-Khac (US 4,408,010) are analogous art because they are from the same field of printing sheets.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Miyamoto et al (US 4,460,637), Desie et al (US 5,418,078) and Le-Khac (US 4,408,010) before him or her, to modify the printing sheet of Miyamoto et al (US 4,460,637) and Desie et al (US 5,418,078) to include the styrene malimide copolymeric latex of Le-Khac (US 4,408,010) in that a styrene malimide

copolymeric latex with a glass transition temperature in the range of 200 °C provides improved heat resistant properties (col. 1, lines 3-6).

17. Claim 108 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al (US 4,460,637), Desie et al (US 5,418,078) and Le-Khac (US 4,408,010) in view of Uytterhoeven et al (US 5,418,110).

Miyamoto et al (US 4,460,637), Desie et al (US 5,418,078) and Le-Khac (US 4,408,010) are relied upon as described above.

Miyamoto et al (US 4,460,637), Desie et al (US 5,418,078) and Le-Khac (US 4,408,010) do not appear to explicitly disclose the printing sheet comprising a binder of an acrylic ester copolymer of butylacrylate, styrene and acrylonitrile.

However, Uytterhoeven et al (US 5,418,110) discloses the printing sheet comprising a binder of an acrylic ester copolymer of butylacrylate, styrene and acrylonitrile (col. 3, line 65-col. 4, line 16).

Miyamoto et al (US 4,460,637), Desie et al (US 5,418,078), Le-Khac (US 4,408,010) and Uytterhoeven et al (US 5,418,110) are analogous art because they are from the same field of printing sheets.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Miyamoto et al (US 4,460,637), Desie et al (US 5,418,078), Le-Khac (US 4,408,010) and Uytterhoeven et al (US 5,418,110) before him or her, to modify the printing sheet of Miyamoto et al (US 4,460,637), Desie et al (US 5,418,078) and Le-Khac (US 4,408,010) to include the acrylic ester copolymer of butylacrylate, styrene and acrylonitrile of Uytterhoeven et al (US 5,418,110) in that having a copolymer of butylacrylate, styrene and acrylonitrile provides improved film forming properties and as well a hard layer being yielded (col. 3, line 65-col. 4, line 16).

18. Claims 110 and 117-119 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al (US 4,460,637) in view of Liu et al (US EP 0 803 374).

Miyamoto et al (US 4,460,637) is relied upon as described above.

Regarding claim 110, Miyamoto et al (US 4,460,637) does not appear to explicitly disclose the printing sheet comprising the top layer having a total dried coat weight in the range of 3 to 25 g/m³.

However, Liu et al (US EP 0 803 374) discloses the printing sheet comprising the top layer having a total dried coat weight in the range of 1 to 100 g/m³ (pg. 7, lines 20-

26). The coating can be applied two or more times to produce two or more image-receiving coatings.

Liu et al (US EP 0 803 374) and the claims differ in that total dried coat weight does not teach the exact same proportions as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the compositional proportions taught by Liu et al (US EP 0 803 374) overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference in order to have high color density, brightness and clarity (pg. 2, lines 26-28) particularly in view of the fact that;

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Regarding claim 117, Miyamoto et al (US 4,460,637) does not appear to explicitly disclose the printing sheet comprising the second layer having a total dried coat weight in the range of 3 to 25 g/m³.

However, Liu et al (US EP 0 803 374) discloses the printing sheet comprising the second layer having a total dried coat weight in the range of 1 to 100 g/m³ (pg. 7, lines 20-26). The coating can be applied two or more times to produce two or more image-receiving coatings.

Liu et al (US EP 0 803 374) and the claims differ in that total dried coat weight does not teach the exact same proportions as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the compositional proportions taught by Liu et al (US EP 0 803 374) overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference in order to have high color density, brightness and clarity (pg. 2, lines 26-28) particularly in view of the fact that;

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Regarding claim 118, Miyamoto et al (US 4,460,637) discloses a printing sheet with an image receiving layer comprising a pigment part of 100 parts of calcium carbonate smaller than $0.5\ \mu\text{m}$ (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27) and each comprising 0 parts of fine particulate kaolin and 0 parts of another fine particulate (col. 5, line 46 – col. 6, line 15; col. 6, line 64 - col. 7, line 27)

Miyamoto et al (US 4,460,637) does not appear to explicitly disclose the printing sheet comprising a third image receiving coating layer.

However, Liu et al (US EP 0 803 374) discloses the printing sheet comprising a third image receiving coating layer (pg. 7, lines 20-26). The coating can be applied two or more times to produce two or more image-receiving coatings.

Regarding claim 119, Miyamoto et al (US 4,460,637) does not appear to explicitly disclose the printing sheet comprising a total weight of 90 to $400\ \text{g/m}^3$.

However, Liu et al (US EP 0 803 374) discloses the printing sheet comprising a total weight of 129.9 to $327.9\ \text{g/m}^3$. The substrate has a coating weight of $127.9\ \text{g/m}^3$ and each image receiving layer has a coating weight of 1 to $100\ \text{g/m}^3$.

Miyamoto et al (US 4,460,637) and Liu et al (US EP 0 803 374) are analogous art because they are from the same field of printing sheets.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Miyamoto et al (US 4,460,637) and Liu et al (US EP 0 803 374) before him or her, to modify the printing sheet of Miyamoto et al (US 4,460,637) to include the coat weights and third image receiving coating of Liu et al (US EP 0 803 374) in that having a third image receiving coating and the required coating weights provides high color density, brightness and clarity (pg. 2, lines 26-28).

19. Claim 115 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al (US 4,460,637) in view of Uytterhoeven et al (US 5,418,110).

Miyamoto et al (US 4,460,637) is relied upon as described above.

Miyamoto et al (US 4,460,637) does not appear to explicitly disclose the printing sheet comprising a binder of an acrylic ester copolymer of butylacrylate, styrene and acrylonitrile.

However, Uytterhoeven et al (US 5,418,110) discloses the printing sheet comprising a binder of an acrylic ester copolymer of butylacrylate, styrene and acrylonitrile (col. 3, line 65-col. 4, line 16).

Miyamoto et al (US 4,460,637) and Uytterhoeven et al (US 5,418,110) are analogous art because they are from the same field of printing sheets.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Miyamoto et al (US 4,460,637) and Uytterhoeven et al (US 5,418,110) before him or her, to modify the printing sheet of Miyamoto et al (US 4,460,637) to include the acrylic ester copolymer of butylacrylate, styrene and acrylonitrile of Uytterhoeven et al (US 5,418,110) in that having a copolymer of butylacrylate, styrene and acrylonitrile provides improved film forming properties and as well a hard layer being yielded (col. 3, line 65-col. 4, line 16).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SATHAVARAM I. REDDY whose telephone number is (571) 270-7061. The examiner can normally be reached on 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Ruthkosky can be reached on (571) 272-1291. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Ruthkosky/
Supervisory Patent Examiner, Art Unit 1794

SATHAVARAM I REDDY
Examiner
Art Unit 1794